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POLYLACTIC ACID(PLA)/ACRYLONITRILE BUTADIENE STYRENE(ABS) NANOCOMPOSITES WITH HYBRID GRAPHENE/ MONTMORILLONITE (MMT)

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EXTENDED ABSTRACT

Poly(lactic acid) is widely used as an environmental friendly polymer that benign to the environment. However, PLA is too brittle to be processed industrially and toughness modification is generally required. In this work, PLA was blended with acrylonitrile butadiene styrene (ABS) and graphene nanoplatelet (GnP) / MMT nanofillers were incorporated in PLA/ABS blends sytem. Melt compounding was carried out in a twin screw extruder with 50 rpm for 15 minutes at temperatures between 160-200 °C. The PLA/ABS and PLA/ABS/GnP/MMT blend systems were characterized for mechanical, thermal, chemical and morphological properties. It was found that the mechanical properties of PLA/ABS/GnP/MMT has improved as compared to PLA/ABS blend. Morphology analysis showed that the mechanical properties improvement could be attributed due to the presence of smaller voids in PLA/ABS/GnP/MMT blend. There were no significant chemical changes on the PLA/ABS and PLA/ABS/GnP/MMT blend systems as revealed by the FTIR spectra.

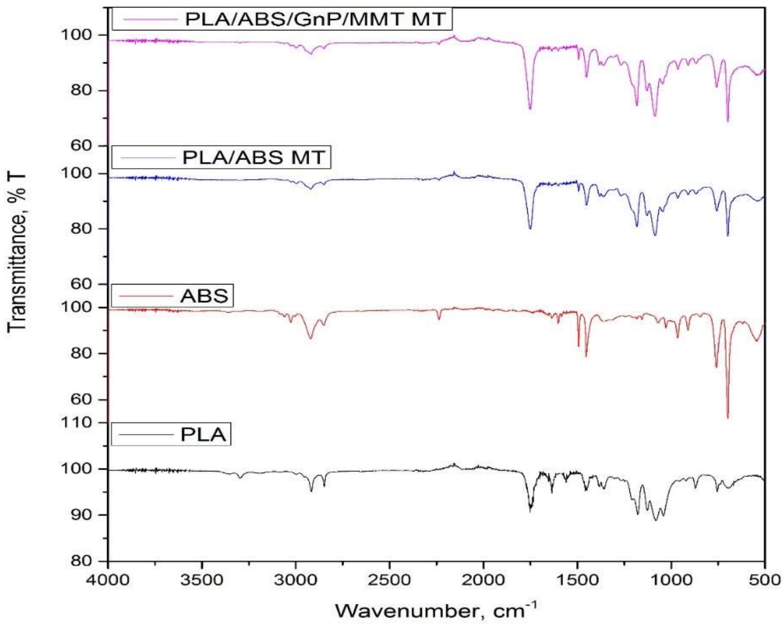

Fig. 1: Transmittance versus wavenumber comparing PLA, ABS, PLA/ABS nanocomposites.

Keywords: PLA; graphene; melt blending; acrylonitrile styrene butadiene; ABS.

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